

Applicant : Nikolai N. Issaev
Serial No. : 10/719,014
Filed : November 24, 2003
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Attorney's Docket No.: 08935-291001 / M-5027/Z-
03494

Amendments to the Drawings:

The attached replacement sheet of drawing includes changes to Fig. 2 and replaces the original sheet including Fig. 2.

In Figure 2, the metal grid drawing was extended to show an array of diamond-shaped openings.

Attachments following last page of this Amendment:

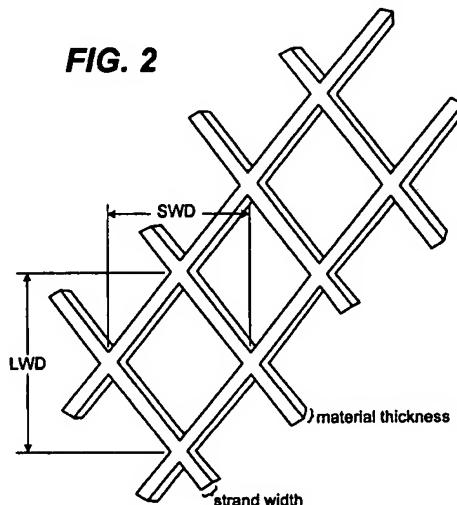
Replacement Sheet (1 page)

Annotated Sheet Showing Change(s) (1 page)

REMARKS

Applicants amended the specification to state that the grid shown in Figure 2 includes an array of diamond-shaped openings. Support for the amendment to the specification can be found in Figure 2, which shows a grid with an array of diamond-shaped openings.

FIG. 2



Applicants also amended the specification on page 5, lines 13-15 to state that the material can have a high yield strength, e.g., greater than 2.5 lb/in, a high tensile strength, e.g., greater than 5 lb/in. Support for the amendment can be found on page 6, lines 9-12 and on page 10, table 2. Applicants amended claims 1, 17, 22, 25, 39, 41, and 57, cancelled claim 21, 26, 35, 40, and 51, and added new claims 58-60. Support for the claim amendments can be found, for example, at Figure 2; and on page 6, line 11 – page 7, line 12; page 11, Table 3; page 7, lines 27- 31; and page 8, lines 5-6 of the specification. Claims 1-20, 22-25, 27-34, 36-39, 41-50, and 52-60 are presented for examination.

The Examiner objected to the title and the abstract of the application. Applicants amended the title and the abstract to obviate the objection, so the objection should be withdrawn. Support for the amendments can be found, for example, at page 7, line 14.

The Examiner rejected claims 21-22, 25, 35-36, 39, and 51 under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants cancelled claims 21, 35, and 51, so the rejection of these claims should be withdrawn. The Examiner alleged that the term "leveling" in claims 22 and 36 is confusing. However, this term is clearly defined in Applicants' specification, for example, on page 7, lines 5-7. Upon reading the specification, a person having

ordinary skill in the art would understand that leveling includes passing a grid between rollers, which can reduce the thickness of the grid, flatten it, and increase its temper by strain hardening. Therefore, the rejection of claims 22 and 36 under 35 U.S.C. § 112, second paragraph, should be withdrawn. The Examiner also rejected claims 25 and 39, because the claims are allegedly not further limiting. As amended, claims 25 and 39 obviate the Examiner's rejection, so the rejection of these claims under 35 U.S.C. § 112, second paragraph, should be withdrawn.

The Examiner rejected claims 1-8, 23-28, 41-48, and 57 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,543,249 ("Takeuchi"). Applicants cancelled claim 26, so the rejection of this claim should be withdrawn. As amended, claims 1-8, 23-25, 27-28, 41-48, and 57 cover methods of making a cathode for a primary lithium battery, including pulling an expanded metal grid including aluminum and an array of diamond shaped openings and having an initial tensile strength, to increase the short dimension and increase the tensile strength to greater than 5 lb/in. The pulled grid is then coated with a composition including a cathode active material. Takeuchi plainly does not disclose or suggest the subject matter covered by claims 1-8, 23-25, 27-28, 41-48, and 57. Takeuchi discloses an expanded metal grid formed of titanium or aluminum, but does not disclose pulling an expanded metal grid including aluminum and an array of diamond-shaped openings. Therefore, Applicants request that the rejection of these claims under 35 U.S.C. 102 (b) be reconsidered and withdrawn.

The Examiner rejected claims 21-22, and 51 under 35 U.S.C. 103(a) as being unpatentable over Takeuchi in combination with U.S. Application Pub. No. 5,543,249 ("Michel"). Applicants cancelled claims 21 and 51, so the rejection of these claims should be withdrawn. Claims 22 depends from claim 1, and covers the same method, with the additional step of leveling the grid before coating. Michel, like Takeuchi, does not disclose or suggest pulling a grid having an array of diamond-shaped openings.

Michel also does not disclose leveling a current collector. Contrary to the Examiner's assertion, a current collector is not leveled when it is stretched. Referring to Applicant's specification, leveling occurs by passing the grid between rollers to reduce the thickness of the grid, flatten it, and increase its temper by strain hardening; whereas pulling includes altering the grid dimensions, such as the short dimension, which can alter the current path through the grid and the resistivity in the machine direction and/or the cross direction. (See, e.g., application,

page 6, lines 25-30). Therefore, pulling and leveling refer to different processes, and a current collector cannot be assumed to be leveled when it is stretched. Thus, while Michel discloses a stretch-forming his aluminum foil, Michel does not disclose leveling a current collector, as required by claim 22.

Thus, in light of the reasons above, Applicants request that the rejection of claim 22 under 35 U.S.C. 103(a) be reconsidered and withdrawn.

The Examiner rejected claims 9-20, 29-34, 37-40, and 49-56 under 35 U.S.C. § 103(a) as being unpatentable over Takeuchi in view of "Candidate material for the sulfur electrode current collector", Corrosion Science, Vol. 26, No. 5, pages 377-388, 1986" ("Tischer"). Applicants cancelled claim 40, so the rejection of this claim should be withdrawn. Tischer does not fill the gaps in Takeuchi discussed previously, at least because Tischer does not disclose or suggest pulling or leveling a grid having an array of diamond-shaped openings. Instead, Tischer discloses an aluminum-silicon carbide composite for use in sodium-sulfur batteries. (See, e.g., Tischer, page 377, Introduction). Therefore, claims 9-20, 29-34, 37-39, and 49-56 are patentable for at least the same reasons that claim 1 is patentable, and Applicants request that the rejection of these claims under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

The Examiner rejected claims 35-36 under 35 U.S.C. 103(a) as being unpatentable over Takeuchi in view of Tischer, and further in combination with Michel. Applicants cancelled claim 35, so the rejection of this claim should be withdrawn. Claim 36 depends from claim 9, which depends from claim 1. Thus, claim 36 is patentable for at least the same reasons that claim 1 is patentable. Applicants therefore request that this rejection be reconsidered and withdrawn.

Applicants believe the application is in condition for allowance, which action is requested.

Enclosed is a \$120.00 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

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Amendment in Reply to Office action of January 8, 2007
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